Advance Information

MPC7450RXQXPNS/D
Rev. 0, 11/2001

MPC7450 Part Number Specification for the XPC7450RXnnnQx Series

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Motorola Part Numbers Affected:

XPC7450RX733QE
XPC7450RX800QE
XPC7450RX867QE

This document describes part-number-specific changes to recommended operating conditions and revised electrical specifications, as applicable, from those described in the general *MPC7450 RISC Microprocessor Hardware Specifications* (order # MPC7450EC/D).

Specifications provided in this document supersede those in the *MPC7450 RISC Microprocessor Hardware Specifications*, Rev. 4 or later, for the part numbers listed in Table A only. Specifications not addressed herein are unchanged. Because this document is frequently updated, refer to http://www.motorola.com/semiconductors or to your Motorola sales office for the latest version.

Note that headings and table numbers in this document are not consecutively numbered. They are intended to correspond to the heading or table affected in the general hardware specification.

Part numbers addressed in this document are listed in Table A.

Table A. Part Numbers Addressed by this Data Sheet

Motorola Part Number	Operating Conditions			Significant Differences from Hardware Specification
	CPU Frequency (MHz)	V_{DD}	T_J (°C)	
XPC7450RX733QE	733	1.9 V ± 50 mV	0 to 65	Modified voltage and temperature specifications to achieve 733 MHz
XPC7450RX800QE	800	1.9 V ± 50 mV	0 to 65	Modified voltage and temperature specifications to achieve 800 MHz
XPC7450RX867QE	867	1.9 V ± 50 mV	0 to 65	Modified voltage and temperature specifications to achieve 867 MHz

Note: The X prefix in a Motorola part number designates a “Pilot Production Prototype” as defined by Motorola SOP 3-13. These are from a limited production volume of prototypes manufactured, tested, and Q.A. inspected on a qualified technology to simulate normal production. These parts have only preliminary reliability and characterization data. Before pilot production prototypes may be shipped, written authorization from the customer must be on file in the applicable sales office acknowledging the qualification status and the fact that product changes may still occur while shipping pilot production prototypes.

1.1 Features

This section summarizes changes to the features of the MPC7450 described in the *MPC7450 Hardware Specifications*.

- Power management
  - — 1.9-V processor core

1.4 General Parameters

- Core power supply:1.9 V ± 50 mV DC nominal

1.5.1 DC Electrical Characteristics

Table 4 provides the recommended operating conditions for the MPC7450 part numbers described herein.

Table 4. Recommended Operating Conditions

Characteristic	Symbol	Recommended Value	Unit
Core supply voltage	V_{DD}	1.9 V ± 50 mV	V
PLL supply voltage	AV_{DD}	1.9 V ± 50 mV	V
Die-junction temperature	T_j	0 to 65	°C

Note: These are the recommended and tested operating conditions. Proper device operation outside of these conditions is not guaranteed.

Table 7 provides the power consumption for the MPC7450 part numbers described herein.

Table 7. Power Consumption for MPC7450

	Processor (CPU) Frequency			Unit	Notes
	733 MHz	800 MHz	867 MHz		
Full-Power Mode					
Typical	22.5	24.6	26.6	W	1, 3
Maximum	32.4	35.3	38.5	W	1, 2
Doze Mode					
Typical	—	—	—	W	1, 2, 4
Nap Mode					
Typical	2.3	2.5	2.7	W	1, 2
Sleep Mode					
Typical	1.2	1.3	1.4	W	1, 2
Deep Sleep Mode (PLL Disabled)					
Typical	790	860	930	mW	1, 3

Notes:
1. These values apply for all valid processor bus and L3 bus ratios. The values do not include I/O supply power (OV_{DD} and GV_{DD}) or PLL supply power (AV_{DD}). OV_{DD} and GV_{DD} power is system dependent, but is typically <20% of V_{DD} power. Worst case power consumption for AV_{DD} < 3 mW.
2. Maximum power is measured at nominal V_{DD} while running an entirely cache-resident, contrived sequence of instructions which keep the execution units, with or without AltiVec, maximally busy.
3. Typical power is an average value measured at nominal V_{DD} in a system while running a typical code sequence.
4. Doze mode is not a user-definable state; it is an intermediate state between full-power and either nap or sleep mode. As a result, power consumption for this mode is not tested.

1.11 Ordering Information

1.11.1 Part Numbers Addressed by this Specification

Table 20 provides the ordering information for the MPC7450 part described in this document.

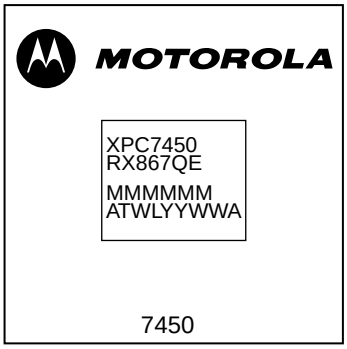
Table 20. Part Marking Nomenclature

XPC	7450	RX	*nnn*	*x*	*x*
Product Code	**Part Identifier**	**Package**	**Processor Frequency[1]**	**Application Modifier**	**Revision Level**
XPC [2]	7450	RX = CBGA	733 800 867	Q: 1.9 V ± 50 mV 0 to 65°C	E: 2.1; PVR = 8000 0201

Notes:
1. Processor core frequencies supported by parts addressed by this specification only. Parts addressed by other specifications may support other maximum core frequencies.
2. The X prefix in a Motorola part number designates a “Pilot Production Prototype” as defined by Motorola SOP 3-13. These are from a limited production volume of prototypes manufactured, tested, and Q.A. inspected on a qualified technology to simulate normal production. These parts have only preliminary reliability and characterization data. Before pilot production prototypes may be shipped, written authorization from the customer must be on file in the applicable sales office acknowledging the qualification status and the fact that product changes may still occur while shipping pilot production prototypes.

1.11.3 Part Marking

Parts are marked as the example shown in Figure 27.



BGA

Notes:
MMMMMM is the 6-digit mask number.
ATWLYYWWA is the traceability code.
CCCCC is the country of assembly. This space is left blank if parts are assembled in the United States.

Figure 27. Motorola Part Marking for BGA Device

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